

REMARKS

In the July 27, 2006 Office Action, claims 1-19, 21, 23, 24, 29-31 and 38-43 were rejected, and claims 20, and 22 were deemed objectionable. This Response amends claims 1, 8, 10, 18, 21-24, 29, 38, and 42, and cancels claims 9, 20, 31, and 43. No new claims have been added. Reconsideration of the application is respectfully requested in view of the above amendments and the following remarks.

Claims 8, 23, 24, and 42 have been objected to because of informalities. Claims 1-12, 15-19, 23, 24, 29-31, and 38-43 have been rejected under 35 U.S.C. §102(e) as being anticipated by Madsen, USPN 6,956,991 (“Madsen”). Claims 1, 10, 13, and 38 have been rejected under 35 U.S.C. §102(e) as being anticipated by Thompson et al., USPN 6,690,855 (“Thompson”). Claim 14 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Madsen and further in view of Hung, USPA 2002/0051602 A1 (“Hung”). Claim 21 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Madsen and further in view of Nolting et al., USPN 4,832,431 (“Nolting”). Claims 20 and 22 have been objected to as being dependent upon a rejected base claim but would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims.

Claim Objections

Claims 8, 23, 24, and 42 have been objected to because of informalities as the claims recite N, and N is not defined in the claims. The claims have been amended to address the informalities. Support for the amendment to claims 8, 23, 24, and 42 may be found in the specification as filed, for example, at paragraph [035], [038], [042], and in Figure 5.

Allowable Subject Matter

Claim 18 has been amended to include the limitations of claim 20 and claim 20 has been canceled without prejudice or disclaimer of the subject matter. Claim 20 having been allowable if rewritten to include all of the limitations of the base claim and any intervening claims, Applicant therefore respectfully submits that claim 18 and claims 19, 21, and 23, which are dependent from claim 18, are now in condition for allowance.

Claim 22 has been amended to include the limitations of the base claim 18 and there being no intervening claims, Applicant therefore respectfully submits that claim 22 is now in condition for allowance.

Madsen

Claims 1-12, 15-19, 23, 24, 29-31, and 38-43 have been rejected under 35 U.S.C. §102(e) as being anticipated by Madsen. Applicant traverses this rejection.

Claims 1, 10, 24, 29, and 38 have been amended, support for which can be found in the specification as originally filed, for example, at paragraphs [027], [032], [042], [045], [047], and [048]. Claims 9, 31, and 43 are being canceled without prejudice or disclaimer of the subject matter, their limitations being included in their respective base claims.

While Madsen discloses “[o]ne or both arms are provided with controllable phase shifters 34 for controlling the pathlength difference between the two arms at the output coupler 33”, (col. 3, lines 41-52), Madsen does not point out any further preference or advantage to having phase shifters in both arms, nor does Madsen discuss phase modulation of an input signal, even though it may be possible to provide a phase modulation simultaneously with switching if there are phase shifters in both arms. In contrast to the lack of teaching by Madsen, the present invention provides phase modulation of the input signal by using the switching elements to adjust the phase of the input signal. In further contrast to Madsen, the present invention teaches providing an equal adjustment at all the switching elements simultaneously. Thus, Madsen neither anticipates, motivates, nor suggests the phase modulation of an input signal as claimed by claims 1, 10, 24, 29, and 38 as amended.

Therefore, Applicant submits that the rejections based on Madsen to claims 1, 10, 24, 29, and 38 as amended should be withdrawn.

Thompson

Claims 1, 10, 13, and 38 have been rejected under 35 U.S.C. §102(e) as being anticipated by Thompson. Applicant traverses this rejection.

Thompson addresses a problem of chromatic dispersion in optical systems by providing a compensator for such dispersion. Thompson makes no mention of providing phase modulation for an input signal as claimed by amended claims 1, 10, 24, 29, and 38 and therefore Applicant submits that Thompson neither anticipates nor in any way makes obvious the present invention.

Applicant further notes that Thompson uses a plurality of stationary delay lines (16a, b, c, ...) that are not interconnected by switches so as to select different paths through the delay lines for an input signal S_{in} ; rather, S_{in} is always sent through all the lines (16a, b, c, ...) to return component signals S_a , S_b , etc. corresponding to each line (col. 10, lines 12-57). Thus,

Thompson uses a plurality of stationary delay lines (single fiber delay lines that are not differential (inherently two-fiber) delay lines and are not switchable) and a plurality of stationary phase actuated fibers (not switchers) which have different lengths and therefore, different phase of beams reflected (not switched) from a stationary mirror (not from, e.g., spatial light modulator) so as to decompose an input signal into frequency bands (col. 10, lines 12-57; col. 11, lines 11-43 and col. 12, lines 15-19). In contrast, each differential delay line of the present invention comprises a pair of fibers, one short, one long, as in claims 2, 11, 18, 24, 29, and 39, in which the input signal is switchable onto one or other line of the pair by the claimed switchers. Thus, Thompson neither anticipates nor in any way suggests these features of the present invention.

§103 Rejections

Claim 14 stands rejected under §103(a) as being unpatentable over Madsen in view of Hung. Applicant traverses this rejection. Claim 14 depends from independent claim 10. As discussed above, Madsen does not teach or suggest each and every limitation of claim 10. Moreover, Hung does not compensate for the shortcomings of Madsen. In other words, even if one skilled in the art were motivated to form the proposed combination of Madsen and Hung, the invention of claim 14 would not be reached.

For at least the above reasons, claim 14 is not unpatentable over Madsen in view of Hung, and Applicant requests the withdrawal of the §103 rejection of claim 14.

Claim 21 stands rejected under §103(a) as being unpatentable over Madsen in view of Nolting. Applicant traverses this rejection. Claim 21 depends from independent claim 18. As discussed above, Madsen does not teach or suggest each and every limitation of claim 18. Moreover, Nolting does not compensate for the shortcomings of Madsen. In other words, even if one skilled in the art were motivated to form the proposed combination of Madsen and Nolting, the invention of claim 21 would not be reached.

For at least the above reasons, claim 21 is not unpatentable over Madsen in view of Nolting, and Applicant requests the withdrawal of the §103 rejection of claim 21.

Prior Art Made Of Record and Not Relied Upon

Applicant submits that neither MacDonald (USPN 6,763,154) nor Baldwin et al. (USPN 5,943,636) teach an optical delay line with phase modulation that simultaneously adjusts phase at each of a plurality of switches as claimed by the present invention.

Conclusion

Applicant would like to thank the Examiner for the notice of allowable subject matter. Reconsideration and withdrawal of the Office Action with respect to claims 1-8, 10-19, 21-24, 29-30, and 38-42 are requested. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

In conclusion, for the reasons given above, all claims now presently in the application are believed allowable and such allowance is respectfully requested. Should the Examiner have any questions or wish to further discuss this application, Applicants request that the Examiner contact the undersigned attorney at (480) 385-5060.

If for some reason Applicants have not requested a sufficient extension and/or have not paid a sufficient fee for this response and/or for the extension necessary to prevent abandonment on this application, please consider this as a request for an extension for the required time period and/or authorization to charge Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

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